



Brodhead High School HMV

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Table of Contents

Day by Day Log Book – Page 3

Week by Week Log Book – Page 5

Basic Vehicle Configuration – Page 7

Power Train Configuration – Page 8

Performance – Page 9

Brake System – Page 9

Safety Items – Page 10

Problem Solving Essay – Page 10

Day-By-Day Journal

2/11/08

We started to take off the Lexan to get to the frame.

2/12/08

We finished taking off Lexan and took off motor. We also took off the sheet metal from the floor.

2/14/08

We started cutting the frame to shorten up the wheelbase.

2/15/08

We continued to cut down the frame to shorten the wheelbase. The process was slower because we were using a hacksaw instead of a power saw.

2/18/08

We started to join the frame together with clamps to get it ready for welding.

2/19/08

We continued to prep the frame for welding.

2/20/08

We finished prepping frame for welding. We also started to cut the frame down again so that we could make it narrower to fit the driver better and to make it lighter.

2/21/08

Due to the lack of argon, we worked on drawing up the components to the frame and any other drawings that needed to be done.

2/25/2008

With no argon we focused on starting to prep the frame again in different area.

2/26/2008

With no argon we focused on cleaning up the shop in our area and prepped the car for the welding process.

2/27/2008

Since the argon came in, we started to get ready to weld. We practiced on a piece of scrap metal. After that we welded part of the frame.

2/28/2008

We continued to weld on the frame. We also started up the parts list for everything that we needed for our car and put stuff on the server.

3/4/2008

We continued to weld the frame. We also started up the engine to make sure that it worked.

3/5/2008

We welded the remainder of the frame and also cleaned the shop.

3/6/2008

We welded the steering onto the frame and ordered the inner tubes for the tires.

3/7/2008

We mounted the engine and tires as well as worked on the steering.

3/10/08

We continued to work on the steering and also cleaned the shop.

3/11/08

We broke the steering attachment, welded it back together, and it broke again. We also cleaned the shop somewhat.

3/12/08

We got sheet metal off of older cars and also the aluminum tubing came in.

3/13/08

We cut the roll bar and made measurements.

3/14/08

We attempted to weld the roll bar; however, the welding gun broke. We also cleaned the shop somewhat.

3/17/08

With the welding gun now fixed, we finished welding the roll bar.

3/18/08

We got the tires ready to roll by replacing the inner tubes in the flats and pumping them all up. Mounted the front two tires. Measured out the back end to attach the back tire, also. Began welding the back part of the frame

3/19/08

Welded the back end of the frame some more.

3/25/08

We worked on welding the back supports for the roll bar.

3/26/08

We continued to work on the back supports for the roll bar.

Weekly Journal



WEEK ONE

We started to work on our car to modify it to our specifications. To do that, we started by removing the Lexan and the sheet metal from the car to get to the frame. After that was completed we started to cut down the frame's wheelbase.

WEEK TWO

We started prepping the frame for welding. To do that, we started to clamp the frame together and remove the paint from the weld points. While we were prepping the frame we decided that we should narrow the frame up to fit our driver better. To do that, we started to cut down our frame.



WEEK THREE

At the beginning of the week we prepped the frame and worked on cleaning up our shop area so it would be easier to weld. We did this because we had no argon for our welder. Towards the end of the week the argon came in, so we started to weld our frame together.

WEEK FOUR

We continued to weld our frame together. We also worked on attaching our steering to our car to make sure it would work. We had to make modifications to the steering arms to fit our modifications to the car. We also attached the tires to make sure that they were working right.





WEEK FIVE

We continued to work on modifying our steering arm, but some difficulties occurred. First our attachment for the steering arm broke. When we tried to fix it, it broke again because it was a thin piece of metal. After that we decided it would be safer to order a new part instead of relying on a weld. Also at the end of the week we worked on the roll bar, but the welding gun stopped working so we work on getting all the metal that we needed organized.

WEEK SIX

With the welding gun now fixed, we continued to weld on the roll bar to the frame. We also replaced the inner tubes in the tires, and got them ready for trial runs when we are done welding. During this week we started to measure the back end of the frame and started to weld that on.

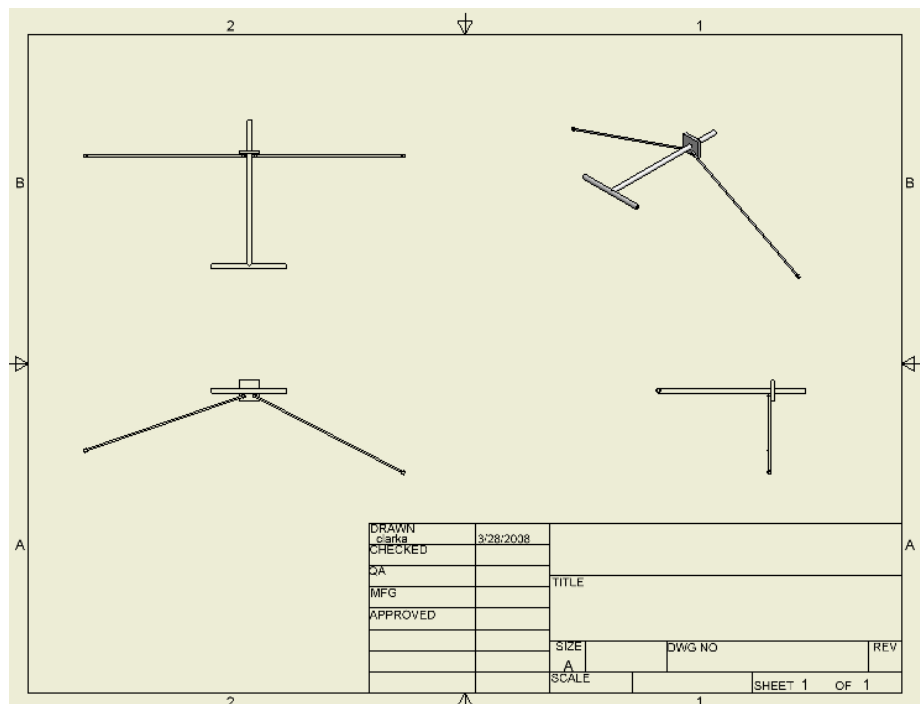
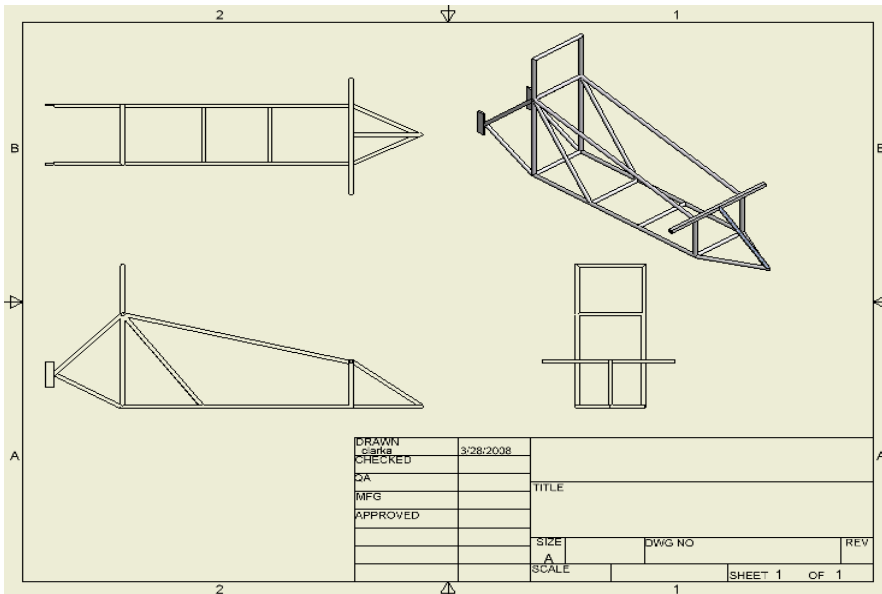


WEEK SEVEN

We continued to weld on the back end of the frame on. With this we had to measure where the tire would line up with the motor so make sure the chain would line up. We also finished working on the roll bar, attaching the rest of the supports in to the frame of the car.

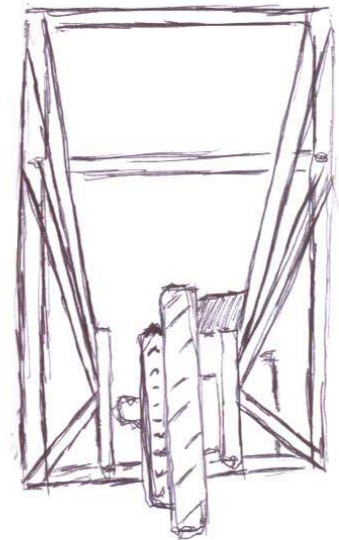
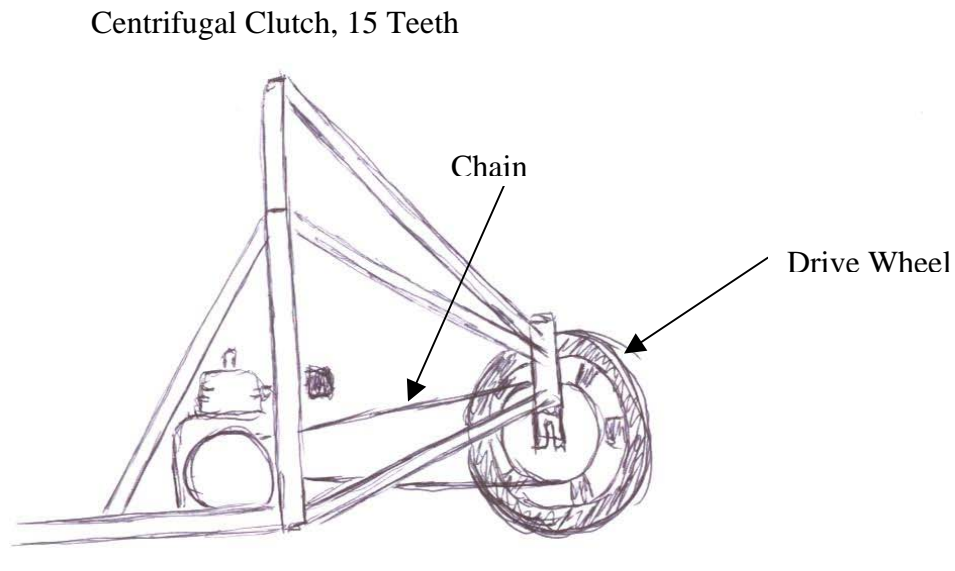
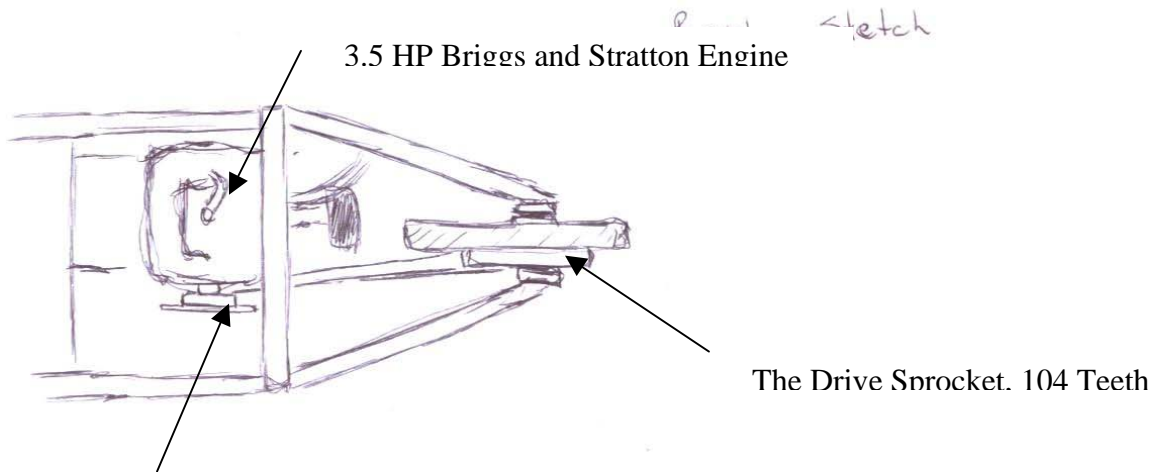
Basic Vehicle Configuration#

Our vehicle is based on three wheels. There are two wheels in the front, and the drive wheel is located in the rear. Our vehicle measures 43" between the front wheels and has a 74" wheelbase. The motor is located behind our driver. Our steering is a basic pivot steering. Our floor is comprised of sheet metal and the sides of lexan. An old lawn mower hand throttle lever controls our gas intake. We also have a hand-actuated lever brake. The attached CAD drawings illustrate the vehicle design.



Power Train Configuration

The vehicle utilizes a Briggs and Stratton 3.5 HP engine. It is attached to a centrifugal clutch that operates a chain drive. The sprocket of the clutch has 15 teeth and the sprocket on the drive wheel has 104.



Performance

We have yet to test out our car. We are currently still in the process of engineering and manufacturing our vehicle.

The Brake System

Our brake system will be comprised of a lever, brake cable, and a standard set of caliper brakes, similar to that of a bicycle. The lever will be located on the floor of the vehicle, right next to the driver's right hip. The lever will then be hooked up the break cable. Once pulled, it will tighten the brakes to the back drive wheel. We have not yet finished with them, and we are currently in the process of engineering them. It will look something like the picture below.



Safety

Our vehicle meets all of the required safety regulations, including a fire extinguisher, roll bar, two kill switches, and a seat belt, as well as a safer fuel bottle. The fire extinguisher is located on the left side of the vehicle behind the driver's left shoulder, and it functions in exterminating any fires that could possibly occur during vehicle operation. The roll bar can be found on the back end of the frame and is comprised of a horizontal bar with two supports connecting it from the bottom to the frame and also two other slanted supports attaching to it from the back. The roll bar functions in protecting the driver in case of a serious accident in which the vehicle would flip over. Our vehicle also features two kill switches, one located behind the driver's right shoulder on the inside of the car. The second one is on the outside next to the Lexan. These function in instantly stopping the engine in case of a malfunction. Another safety feature of our car is a seat belt, which is placed over the lap and shoulder of the driver. This holds the driver in the car in case of any jumps or serious accidents that could potentially eject him from the car. One additional feature of our car is the fuel bottle, which is located behind a firewall, directly behind the driver's head. The firewall protects the driver in the event there is a fire in the engine compartment.

Problem Solving Essay

We had our fair share of problems when we were building our vehicle. Due to being only a second semester class, we had only 9 weeks to design and build a vehicle. To solve that, we took an existing vehicle and reverse engineered the entire car, and then made improvements. We felt like we needed to lighten our vehicle. We ended up cutting our car in half to make it narrower. The total amount of pipe that we cut off was over 7 feet. Since the car was narrower than before, it meant that we also had to redesign the back end. We increased the distance between the back wheel and the engine to make sure that nothing rubbed. We are also currently having a problem with getting our chain to be tight. So to solve it, we are going to add a little bracket for us to extend where we put the back wheel.

The team has learned that you all must work together to achieve the final goal of finishing the vehicle. You have to be able to rely on your friends and their talents to accomplish the goal. Each deadline missed, not only affected the people that made the

mistake, but the entire team suffered. Downtime while waiting for materials or another group to finish was very frustrating. Proper design before you start building saves a lot of tension and frustration within the group. It also prevents you from wasting materials and having to start over.